

REMARKS

Claims 5-7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Applicant's admitted prior art ("APA") in view of the technical article authored by Wolf, and under 35 U.S.C. § 103 as being unpatentable over Rumennik et al. '983 (hereinafter, "APA" because Rumennik et al. '983 is simply the full disclosure on which APA is based; *see* page 1, line 10 of Applicant's specification) in view of Williams et al. '216 ("Williams"). Claim 5 is independent. These rejections are respectfully traversed for the following reasons.

Claim 5 recites in pertinent part, "a first step of selectively implanting [an] ... impurity ion ... with an implantation energy that is equal to or greater than about 1.0 MeV and less than or equal to about 3.0 MeV." The Examiner admits that APA does not disclose or suggest such an implantation energy. Indeed, as acknowledged by the Examiner, APA expressly discloses an implantation energy that is far outside the claimed range (i.e., 100-150 keV).

Turing to the first rejection under § 103 over APA in view of Wolf, the Examiner alleges that APA "also teaches that the lower implantation energy (100 – 150 keV) caused high resistance at the deeper regions (25, 26) of the extended drain region 23, (page 5, lines 2-5) which caused the overall resistance of the extended drain region to be greater than desired (page 4, lines 21-23" (*see* page 3, lines 7-10 of outstanding Office Action). Based on this alleged teaching of APA, the Examiner modifies APA with the teachings of Wolf in an attempt to reach the claimed invention.

However, it is respectfully submitted that the Examiner's relied on motivation to make the combination is derived solely from Applicant's specification, and is therefore based entirely on improper hindsight reasoning. The Examiner has misinterpreted APA. That is, the cited

portions of Applicant's specification describing the problems associated with the lower implantation energy of APA is NOT prior art. Rather, for example, page 5, lines 2-5 of Applicant's specification, describes Applicant's recognition of the problems associated with APA. Indeed, one of the objects of the present invention is to overcome these problems associated with the low energy implantation of APA. Contrary to the Examiner's assertion, this defect is NOT known, but was recognized only by Applicant who conceived of a means by which to obviate the problem.

Wolf, on the other hand, merely describes the *general* relationship between implantation energy and dopant depth/concentration. Wolf is completely silent as to suggesting the desirability for providing an increased implantation energy relative to the 100-150 keV of APA, let alone for the specific process of forming an extended drain region.

It is respectfully submitted that only Applicant has recognized the problem related with a low energy implantation for forming an extended drain region, and conceived of a means by which to obviate the problem. Neither APA nor Wolf suggests the desirability of increasing the implantation energy specifically for the formation of an extended drain region relative to the 100 – 150 keV disclosed by APA. Accordingly, it is submitted that the proposed combination is improper at least because the Examiner has not provided the requisite *objective* evidence *from the prior art* that "suggests the desirability" of the proposed combination.

The Examiner is directed to MPEP § 2143.03 under the subsection entitled "Fact that References Can Be Combined or Modified is Not Sufficient to Establish *Prima Facie* Obviousness", which sets forth the applicable standard:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. (*In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990)).

In the instant case, even assuming *arguendo* that APA can be modified by Wolf, it is submitted that the "mere fact that [APA and Wolf] can be combined ... does not render the resultant combination obvious" because nowhere does the prior art "suggest the desirability of the combination" as set forth by the Examiner. As discussed above, the Examiner's asserted motivation is based on Applicant's own disclosure so as to be improper hindsight rationale.

The Examiner is further directed to MPEP § 2143.01 under the subsection entitled "Fact that the Claimed Invention is Within the Capabilities of One of Ordinary Skill in the Art is Not Sufficient by Itself to Establish *Prima Facie* Obviousness", which sets forth the applicable standard:

A statement that modifications of the prior art to meet the claimed invention would have been [obvious] because the references relied upon teach that all aspects of the claimed invention were *individually* known in the art is *not* sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. (citing *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993)).

In the instant case, even assuming *arguendo* that APA and Wolf "teach that all aspects of the claimed invention [are] individually known in the art", it is submitted that such a conclusion "is not sufficient to establish a *prima facie* case of obviousness" because there is no *objective* reason on the record to combine the teachings of the cited prior art. Again, Wolf is merely describing known relationships between implantation energy and dopant depth/concentration; without suggesting the use of a particular implantation energy, let alone using the particular implantation energy for the specific process of forming an extended drain region. Indeed, the Examiner concedes this point by relying on APA for the asserted motivation, which, as discussed above, is based entirely on Applicant's own disclosure.

Turning to the second rejection under § 103 over APA in view of Williams, the Examiner modifies APA with the teachings of Williams based on the alleged motivation from Williams that the "formation of such a buried layer reduces the on-resistance of the device (col. 4, lines 1-5)" (*see* page 5, lines 3-6 of outstanding Office Action). However, Williams is completely silent as to the implantation energy *for an extended drain region*. The disclosed implantation energy of Williams is directed to a **buried layer**, and is therefore, at best, attributable to the implantation energy for forming the buried layers 18A,B of APA rather than the extended drain region 23. Accordingly, even assuming *arguendo* proper, the proposed combination does not disclose or suggest the claimed implantation energy for forming an extended drain region.

The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested", which sets forth the applicable standard:

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejection does not "establish *prima facie* obviousness of [the] claimed invention" as recited in claim 5 because the proposed combination fails the "all the claim limitations" standard required under § 103.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 5 is patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

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addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

Based on the foregoing, it is respectfully submitted that all pending claims are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejections under 35 U.S.C. § 103 be withdrawn.

CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicant submits that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicant's attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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